

LISTING of CLAIMS

1. (original) A method of using a water-based boron-containing suspension as a source of boron additive in a starch-based adhesive, said water-based boron-containing suspension being substantially free of organic solvent(s), said method comprising introducing said water-based boron-containing suspension into a mixing or reaction zone during the preparation of said starch-based adhesive.
2. (original) The method of claim 1, wherein said water-based boron-containing suspension comprises:
 - a) from about 5 wt% to about 60 wt% of at least one boron compound;
 - b) from about 0.05 wt% to about 10 wt% of at least one suspension aid; and
 - c) from about 30 wt% to about 95 wt% of water.
3. (original) The method of claim 1, wherein said water-based boron-containing suspension comprises:
 - a) from about 5 wt% to about 18 wt% boron;
 - b) from about 0.5 wt% to about 5 wt% clay; and
 - c) from about 0.05 wt% to about 1 wt% polysaccharide.
4. (currently amended) The method of claim [[1]] 3, wherein said clay is swellable clay.
5. (currently amended) The method of claim [[1]] 3, wherein said polysaccharide is xanthan gum.
6. (original) The method of claim 1, wherein said water-based boron-containing suspension is free of amine-based solvent(s).
7. (currently amended) The method of claim 1, wherein said suspension has a maximum maximum particle size of no greater than about 50 microns.
8. (original) An aqueous starch-based adhesive, comprising:
 - a) water;
 - b) starch;
 - c) caustic soda; and
 - d) from about 0.05 wt% to about 10 wt% a water-based boron-containing suspension that is substantially free of organic solvent(s).

9. (original) The adhesive of claim 8, wherein said water-based boron-containing suspension comprises:
 - a) from about 8 wt% to about 13 wt% boron;
 - b) from about 0.5 wt% to about 5 wt% clay; and
 - c) from about 0.05 wt% to about 1wt% polysaccharide.
10. (original) The adhesive of claim 8, further comprising a waterproofing additive.
11. (original) The adhesive of claim 8, wherein said adhesive exhibits wet pin bond strength of at least about 5 lbf according to TAPPI T-821 test method.
12. (original) The adhesive of claim 8, wherein said adhesive exhibits wet bond strength characterized by percentage fiber tear of at least about 50% estimated after wet pin bond strength test.
13. (original) The adhesive of claim 8, wherein said adhesive exhibits a dry pin bond strength of at least about 50 lbf according to TAPPI T-821 test method.
14. (currently amended) The adhesive of claim 8, wherein said waterproofing additive is a waterproofing resin chosen from ketone-formaldehyde, acetone-formaldehyde, urea-formaldehyde, acetone-urea-formaldehyde, acetone-melamine-formaldehyde, resorcinol-formaldehyde, polyphenolic resin, [[and]] or mixtures thereof.
15. (original) A method of making starch-based adhesive of claim 8, comprising adding a water-based boron-containing suspension as a source of boron additive into a mixing zone or reaction zone during the preparation of said starch-based adhesive, said water-based boron-containing suspension being substantially free of organic solvent(s).
16. (original) A method of making a corrugated board, comprising
 - corrugating a sheet to create a medium bearing fluted tips having a first side and a second side;
 - applying a starch-based adhesive of claim 8 to the first side of said fluted tips of said medium to create a first adhesive bearing surface; and

bringing a first liner substrate in contact with said first adhesive bearing surface.

17. (original) The method of claim 16, wherein said sheet is a laminate composed of at least two sheets bonded with an adhesive.
18. (original) The method of claim 17, wherein said adhesive is the starch-based adhesive of claim 8.
19. (original) The method of claim 16, further comprising applying an adhesive to the second side of the fluted tips of the medium to create a second adhesive bearing surface; and bringing a second liner substrate in contact with said second adhesive bearing surface.
20. (original) A corrugated board prepared according to the method of claim 16, comprising
 - a) a fluted medium bearing fluted tips having a first side and a second side,
 - b) a first liner substrate, and
 - c) a starch-based adhesive of claim 8 sandwiched between the first side of said fluted tips of the medium and said first liner substrate.
21. (original) The corrugated board of claim 20, further comprising a second liner substrate and an adhesive sandwiched between the second side of said fluted tips of the medium and said second liner substrate.
22. (original) A laminate comprising a first substrate having a first surface and a second surface; a second substrate having a first surface and a second surface; and a starch-based adhesive of claim 8 sandwiched between said first surface of said first substrate and said first surface of said second substrate, said laminate being prepared by applying the starch-based adhesive of claim 8 to said first surface of said first substrate to create a first adhesive bearing surface; and having said first surface of said second substrate in contact with said first adhesive bearing surface.
23. (original) The laminate of claim 22, wherein said laminate is a fluted medium bearing plural fluted tips having a first side and a second side, said starch-based adhesive being applied to the first side of the fluted tips to create said first adhesive bearing surface.

24. (original) A method of using a water-based boron-containing suspension as a source of boron additive in a starch-based adhesive, said method comprising introducing said water-based boron-containing suspension into a mixing or reaction zone during the preparation of said starch-based adhesive, said starch-based adhesive exhibiting wet bond strength characterized by percentage fiber tear of at least about 50% estimated after wet pin bond strength test.
25. (original) An article of commerce, comprising a container that contains a water-based boron-containing suspension, said water-based boron-containing suspension being substantially free of organic solvent(s), said container bearing an instruction to use said suspension in a starch-based adhesive.